many alternative ways of implementing both the process and apparatus of the present invention. For example, whenever a variable is described as being stored in an object, the variable could equivalently be stored in a different data structure and a pointer to the data structure could be provided in the object. Accordingly, the present embodiments are to

5 be considered as illustrative and not restrictive, and the invention is not to be limited to the details given herein, but may be modified within the scope and equivalents of the appended claims.

WHAT IS CLAIMED IS:

CLAIMS

10 1.   A method of maintaining the state of a virtual connection supported by an active connection manager on a standby connection manager comprising:

configuring the standby connection manager to include a physical machine object that stores a physical IP address of a physical machine that is available to the active connection manager and a virtual machine object that stores a virtual IP address of a

15 virtual machine that is implemented on the connection manager;

receiving a replication packet at the standby connection manager from the active connection manager wherein the replication packet includes a foreign IP address, the virtual IP address and the physical IP address; and

storing a standby connection object in the connection manager that includes the foreign IP address, the virtual IP address and the physical IP address from the replication packet on the standby connection manager.

2. A method of maintaining the state of a virtual connection as recited in claim 1 further including changing the standby connection manager to an active state and translating the destination IP address of incoming packets that have a packet source address that matches the foreign IP address and a packet destination address that matches the virtual IP address into the physical IP address.

3. A method of maintaining the state of a virtual connection as recited in claim 1 further including:

updating a physical machine counter in the physical machine object when a replication packet is received that includes the physical IP address.

4. A method of maintaining the state of a virtual connection as recited in claim 1 further including:

updating a virtual machine counter in the virtual machine object when a replication packet is received that includes the virtual IP address.

5. A method of maintaining the state of a virtual connection as recited in claim 1 further including :

receiving a replication packet at the standby connection manager from the active connection manager wherein the replication packet includes the foreign IP address, the virtual IP address, and a flag indicating that the replication packet corresponds to a deleted connection; and

deleting the standby connection object that includes the foreign IP address and the virtual IP address.

6.   A method of maintaining the state of a virtual connection as recited in claim 1 wherein the replication packet includes a includes a second foreign IP address, a second virtual IP address and a second physical IP address wherein the second foreign IP address, the second virtual IP address and the second physical IP address correspond to a second virtual connection that is associated with the first virtual connection.

7.   A method of maintaining the state of a virtual connection as recited in claim 6 wherein the second virtual connection is not timed out unless the first virtual connection is timed out.

8.   A method of maintaining the state of a virtual connection as recited in claim 6 wherein the first virtual connection is an FTP control connection and the second virtual connection is an FTP data connection.

9.   A method of maintaining the state of a virtual connection as recited in claim 1 further including changing the standby connection manager to an active state and updating a time stamp in a physical machine object to reflect the current time before timing out the physical machine object.

10.   A method of maintaining the state of a virtual connection as recited in claim 1 further including changing the standby connection manager to an active state and updating a time stamp in a virtual machine object to reflect the current time before timing out the virtual machine object.

11.	A method of maintaining the state of a virtual connection as recited in claim 1 wherein the physical machine wherein new connections are distributed to the physical machine using a load balancing scheme that depends on the number of connections made to the physical machine.

12.	A method of maintaining the state of a virtual connection as recited in claim 1 further including receiving configuration information for configuring the standby connection manager on a configuration connection.

13.	A method of maintaining the state of a virtual connection as recited in claim 12 wherein the configuration connection is a dedicated configuration connection between the active connection manager and the standby connection manager.

14.	A method of maintaining the state of a virtual connection as recited in claim 1 wherein the replication object also includes a virtual machine port number.

15.	A method of maintaining the state of a virtual connection as recited in claim 1 wherein the replication object also includes a physical machine port number.

16.	A method of maintaining the state of a virtual connection as recited in claim 1 wherein the replication object also includes a foreign port number.

17.	A method of maintaining the state of a virtual connection as recited in claim 1 further including checking the size of the replication packet.

18.	A standby connection manager comprising:

a physical machine object that stores a physical IP address of a physical machine that is available to an active connection manager and a virtual machine object that stores a virtual IP address of a virtual machine that is implemented on the active connection manager;

5   means for receiving a replication packet from the active connection manager wherein the replication packet includes a foreign IP address, the virtual IP address and the physical IP address; and

a standby connection object that includes the foreign IP address, the virtual IP address and the physical IP address from the replication packet on the standby connection
10   manager.

19.   A fault tolerant connection manager system including:

an active connection manager that implements a virtual machine on a physical machine by translating destination IP addresses of incoming packets that have a packet source address that matches a designated foreign IP address and a packet destination
15   address that matches a designated virtual IP address into a designated physical IP address:

a standby configuration connection that transfers configuration information about the virtual machine and the physical machine from the active connection manager to the standby connection manager;

a standby connection manager configured to implement the virtual machine on the
20   physical machine, the standby connection manager including a standby connection object that includes the designated foreign IP address, the designated virtual IP address and the designated physical IP address from the replication packet on the standby connection manager.

20.   A fault tolerant connection manager system as recited in claim 0 wherein the active connection manager is configured to send the standby connection manager a replication packet and the replication packet includes the designated foreign IP address, the designated virtual IP address and the designated physical IP address.